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## ATLANTIC JOURNAL

AND

## FRIEND OF KNOWLEDGE

A QUARTERLY JOURNAL OF

HISTORICAL AND NATURAL SCIENCES, USEFUL KNOWLEDGE, &c.,  
WITH FIGURES.

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Professor of Historical and Natural Sciences, Member of many learned Societies in America and Europe, Author of many Works, &c. &c.

*Knowledge is the mental food of man.*

VOL. I.

PHILADELPHIA, AUTUMN OF 1833.

No. 7.

### Article 140.

SCIENTIFIC TRAVELS OF C. S.  
RAFINESQUE, IN 1833.

My first journey this Spring was to the Pine barrens and Marl pits of New Jersey, I had a pit opened at my expense, and collected there many fine fossils, some of which are new.

The second was in the Southern States. I meant to follow the Apalachian Mts. to the Unaka Mts. of N. Carolina and Tennessee; but was prevented by the rains and an accident: I explored however, the Mts. Cotocton of Virginia and Maryland, which to my great surprise, I found divided into three ranges or ridges, uniting into one N. of the Potomac with an insulated mt. in front to the E. called the Sugarloaf, 25 miles in circuit. All this is omitted in our maps. I brought many plants, and some N. sp.

My third excursion was on the Schuylkill, from the mouth of Manayunk and Spring-mill.

In July I took a fourth journey to the Pine barrens of N. Jersey, and the littoral islands of the sea shore at Manahawkin and Long beach island, where I collected many shells and plants with an *N. G. Ygramela maritima*.

My fifth journey was in the mts. of New-York, after giving some lectures in Troy and exploring the Bald mountain E. of Lansingburgh 1030 feet high, I went on a kind of scientific pilgrimage to the sources of the rivers Delaware and Susquehanna, sites of great interest and yet where no Philadelphian had ever gone to explore nature. I found the physical geography of that region totally neglected by our map makers. I explored the Heidelberg mts. or rather that table-land of 1200 to 1500 feet, the Schorarie or Skohary mts. the Oruago mts. 3000 to 2600 feet high, which are the western side of the Kiskatom or

Catskill mts. The Delaware springs from Lake Utsuntha 2000 feet above the sea, and the Susquehannah 40 miles distant from Lake Otsego 1200 feet high. I visited the Rattle Snake hills, Otsego hills, Brimstone falls 150 feet high, &c. This region is a table-land, western continuation of the Heidelberg, and which is twice cut through by the river Mohawk. I have brought from thence a fine collection of fossils, plants &c., some N. sp many views &c.

#### 141. PHYSICAL GEOGRAPHY.

*Elevations of land and water, mountains and hills in the State of New York.*

The singular configuration of this state has but lately been noticed, when surveys were made for the canals and roads. In 1829, Joseph Henry read before the Albany Institute his topographical sketch of N. Y. which is published with a very uncouth section from East to West, and he has omitted the North and East of the state. The geological sections of Prof. Eaton do not attempt to connect them with Physical Geography by graduated scales. All the map-makers took no notice of the mts. and table-lands of this state, until David Burr who in 1832 has at last delineated in part the N. Alleghenies and some other mts. of this state in his small map, reduced from the large or county maps, wherein most of these mts. are omitted again, being

mere flat surveys. It was also in 1832 that I drew those mts. in Tanners new map. My labor and Burr's being contemporaneous and both original, may mutually correct each other. Mine is by no means perfect not having visited the whole state; he had better materials and opportunities, yet he is defective in the Catskill and Macomb mts. he lacks the Oquago mts. and all those between Troy and Lake Champlain, &c.

Having procured during my late journey in that state many additional materials, I shall now condense the whole in a general view. The following abbreviations will be used, H. for Henry, C. for W. Campbell, surveyor mpt. P. for Captain Partridge, S. for Spafford, R. for Rafinesque.

This state may be deemed divided into 6 parts, 3 level and 3 lofty. 1. Long Island nearly level and belonging to the great atlantic clysmian formation extending hence to Florida. This island with Staten Island, Manhattan, &c., are properly the Delta of the R. Hudson; but Staten Island has primitive hills and is not clysmian. Manhattan is partly so.

2. The valley of the Hudson as far as Glen's Falls, and of the Mohawk, united with Lake Champlain, by a level of 147 feet. These valleys average from 200 to 500 feet. It is evident that when the sea was 150 feet higher it must have joined these valleys by a

streight, and all E. of it must have been a large island.

3. The plains along Lake Ontario and the R. St. Lawrence, which average from 300 to 500 feet also, but are of a different nature, mostly organic and limy.

Those 3 level tracts divide the other 3 high regions or table-lands of the state.

4. The Taconic or Taghkanik region to the East, a range of mts running N. and S. but at the end turning W. to form the Manhattan highlands.

5. The Alleghany Region, the largest of all, forming a table-land 360 miles wide in the S. of the state, and of organic formation.

6. The Saranac Region, to the North, primitive like the Taconic. L. Champlain separates them. It is the least known and explored, but also a table-land.

Yet the whole state lies in the great Lake region of North America, extending from N. England to Alaska. It is filled with lakes, of which 5 are very large, 20 of middle size, and the small ones are innumerable, perhaps 2000. A single county that of Delaware has 60, another 100. They extend even to Long Island. I will therefore begin with those lakes.

The 3 Great Lakes.

1. Lake Champlain lowest; 93 feet above sea at head, 90 at N. end.

2. Lake Ontario 232 feet, S.

3. L. Erie highest 565 feet, S.

The Lakes of the Alleghany.

1. L. Otsego, head of river Susquehanah 1200 feet, R. 1198, H.

2. L. Utsyantha small, head of Delaware 2000 feet, R.

3. L. Chataugue, head of Alleghany R. 1291 feet, H.

4. The two lakes on Catskill mts. 2200, R.

5. Fish Lake 1715 feet, H.

6. Cataraugus L. 1665, H.

7. Beaver L. 1704, H.

8. Lime L. 1623, H.

9. Crooked L. 718, H.

10. Canandaigua 668, H.

11. Seneca L. 447, H. 455, C.

12. Cayuga L. 387, H. 415, C.

13. Skeneateles L. 752, H.

These 5 last lakes are on the N. slope of the Alleghany.

14. Tully Lakes, 1194, H.

The lakes of the 3 low regions have no great elevation, except Oneida, 375, and Onondagua 361. Cross L. 370, H. Those of the Taconic region are all small. Those of the Saranac region are numberless but unmeasured, except Lake George 536 feet, P. those at the head of R. Saranac and Hudson are about 1000 feet.

1. *Region. Insular*, highest hills.

Hempstead hills L. Id. 319, P.

Tompkins hill, Staten Island 307, P.

Closter mt. Manhattan Id. 539, P.

2. *Region of Hudson Valley*:

Capitol of Albany 130, H.

126, C. West Point 188, P.

Kingston 188, H. 198, C.

Warwasing 311, C.

Bald Mountain 1050, R.

Haverstraw mt. 852, P.

Level between the Hudson  
and L. Champlain 147, H.

Utica and long level 425, H.

3. *Region of Ontario L.*

Ogdensburg 226, H.

Outlet of Onondago L. 361 H.

Rochester at the Falls of  
Genesee R. 506.

Base of Niagara Falls 338 H.

Top of the said Falls 502, H.

4. *Region of Taconic and Mat-  
tawan Mts*

1. Saddle mt. highest T.  
2915, P.

2. Peterboro mt. T. 1864, P.

3. Mt. Anthony 1853 P. in T.

4. Williams College 686, P.  
in T.

5. Sachem mt or New Bea-  
con, highest of M. 1585, P.

6. Butter hill M. 1529, P.

7. Bull hill M. 1484, P.

8. Old Beacon M. 1471, P.

9. Fort Putnam M. 598, P.

The highest mt of this range is  
in Vermont, E. of L. Cham-  
plain. Mansfield mt. 4280, P.

5. *Region, Northern or of Sa-  
ranac.*

1. Average of the table-land  
800 to 1200 feet, R. at Boons-  
ville 1135, H.

2. Whiteface mt. highest  
2686, H.

3. Giant of the valley 1700, S.

4. Mt. Defiance on L. Cham-  
plain 813, P.

6th. *Region, Alleghany Mts.*

1. Average of the central  
table-land 1500 to 2000, R.

2. Average of the Western  
table-land 1365 to 1565, S.

3. Average of the Eastern  
table-land 1200 to 1500, R.

4. Average of the Northern  
apron 600 to 800, R.

5. Highest summit between  
valleys of Delaware and Sus-  
quehannah 2440, R. River Gap  
2143, C.

6. Ditto between Susq. and  
Alleghany Rivers 2135, C.

7. Labagat Peak highest of  
Catskill mts. 3814, P.

8. High Peak next highest,  
3718, P.

9. Pine Orchard in C. 2214,  
P. hills near it 2544 R.

10. Oquago mts. W. side of C.  
highest 3600, R.

11. Hills around Utsyantha L.  
2560, R.

12. L. Otsego hills 1715, C.

13. Village of Cherry valley  
1336, C.

14. Skohari mts. 1978, C.

15. Mts. between Seneca and  
Cayuga L. 1256, C.

16. Angelica on Genessee R.  
1428, C.

17. Mts. of Genessee valley  
2062, C. 2415, C.

18. Isua mts. at head Allegha-  
ny River 2135, C. 2350, C.

19. Delhi on the R. Delaware  
1385, C.

20. Unadilla R. and village  
1015, C.

21. Seneca mts. W. of Seneca  
L. 1644, C.

22. Heidelberg mts. N. apron  
of Catskill, table-land average  
1200, R. Highest hill near  
Black Lakes 1510, R.

23. Stamford 1 mile below  
Utsyantha L. 1880, C. 1887, H.

24. Chemung gap between Se-  
neca L. and Chemung River,  
890, H.

25. Marshy summit level be-  
tween Genessee R. and Alle-  
ghany R. 1486, H.

26. Mongap mts. or S Kiskatom near Pennsylv. line 2080, C Kiskatom or Kiskanom true name of Catskill mts.

27. Shawangunk mountains, between Kiskatom and Mat-tawan 1668, C.

28. Conewango mts. E. of Chataque L. 1666, H.

C. S. RAFINESQUE.

#### 142. GEOLOGY.

*Some essential views of Geology, by Dr. Hibbert and Rafinesque.*

The following facts and principles are chiefly taken from the excellent Essay on Stratification, by Dr. Samuel Hibbert (Edinburg, 1822), who has by actual observations in Scotland the Shetlands and Orcades, entirely overthrown the fanciful theory of regular primitive strata, made out in Saxony for the whole world by Werner.

Every general theory in Geology (and many other sciences of facts), is thus gradually destroyed by careful and impartial observers. All the greatest discoveries in Geology are commonly performed by them, and those who neither belong to systematic schools, nor to learned academies, so often tenacious of learned errors. Thus it was Palissy (a potter), who in the 16th century first noticed and declared that fossils were organic remains, and not sports of nature as then believed: his opinion was laughed at for 100 years by the learned, and even by Voltaire long after, and yet it was the truth!

It was Lehman who first observed the succession of rocks, and called them primitive, secondary, alluvial, volcanic and basaltic, long before Werner. It was a plain surveyor who first ascertained the succession of English rocks, and made a geological map of England, without any assistance from the learned.

It was Hutton in Britain, Spallanzani in Italy and Patrin in France, all geological observers, unconnected with the prevalent schools, who first noticed properly the general and extensive operation of volcanic agency, which now begin to be partly acknowledged, in spite of the Wernerian school and other learned theories of sedentary teachers.

I was myself once a Wernerian; but as soon as I could observe for myself, and study rocks, strata, mountains and volcanoes, not in books and cabinets, but where they stand and display their phenomena, I became an enquirer, in search of facts and truth, instead of supports for a favorite theory. At present the greatest foes of free enquiry, geological truth, and the progress of science, are those theorists, who bow to names and merely study the dogmatic books of their idols and sect, or at best mere cabinet specimens.

With this pre-understanding I shall now give a concise analysis of the important views of Hibbert, with some notes of my own.

I. The truths established by the great astronomer Laplace, upon the theory of the earth, are chiefly, 1. That the earth was probably formed by a concretion of gaseous matter, being apart of the solar atmosphere, (or a nebulous *akash* or ether.)

2. The whole earth has once been fluid.

3. The figure of the surface of the globe, is a little different from a true fluid sphere.

4. The mean density of the earth is 4867, water being 1000

5. The density of mountains vary from 2000 to 4500.

6. The density of the strata increase from the surface, to the centre of gravity of the globe.

7. Strata are very nearly regularly disposed around this centre of gravity.

8. But nothing proves that they are quite concentric.

9. The irregularities of the surface have little depth.

10. The depth of the sea is only a small fraction.

Both the Wernerians and Huttonians begin to admit these facts and demonstrable truths. (A.)

II. Primitive rocks so far from being concentric to the globe are merely local like the others. 1. In Cornwall, Scotland and Shetland *the granit shoots into other strata!* imbedding them, or being imbedded by them.

2. All the kinds of primitive rocks are found in the Shetland islands, *intermixed or ever running into each other!* forming

veins, interstrata and intermasses. Even masses of granit and veins traverse the limestone! Such are granit, gneiss, sienite, porphyry, clay slate, serpentine, mica slate, hornblende, quartz, chlorite, limestone, sandstone, &c. (B.)

3. All vertical sections of land are therefore erroneous when uniting theoretical views, and invisible connections of strata. Horizontal plans can only be proved by evidence of limits. (C.)

4. Certain intervals of cessation have occurred during the formation of terrestrial matter.

5. During these intervals the surface of the globe has become the habitation of certain tribes of animals and plants.

6. These organized beings have become extinct by the successive investments of new strata deposited by a fluid. (D.)

7. Several secondary strata merely differ from the primitive by imbedding organic remains. (E.)

8. Volcanic strata have some peculiar rocks, but at the same time nearly all the primitive and secondary series.

9. The geysers or hot volcanic springs, emit thermal rocks resembling basalt, wacks, amygdaloid, porphyry, tuffa, and even obsidian! (F.)

10. Therefore such rocky strata, often deemed primitive, secondary or anomalous, may have been of volcanic origin. (G.)

III. The following are the order of organic strata and

relics, from the lowest to the highest.

1. *Oldest or lowest.* With coal traces of vegetation and a few marine animals. (H.)

2. *Cubical limestone.* With extinct encrinurites. (L.)

3. *Lias.* With ammonites, trigonites, pentacrinites, &c.

4. *Sandstone and Grit.* With belemnites, ammonites, trigonites, &c.

5. *Soft Chalk.* With the same.

6. *Hard Chalk.* Scaphites, oval ammonites.

7. *Sand and Blue Clay.* Many shells not found in older strata, some yet living.

8. *Gravel.* With recent shells and land animals.

9. *Gypsum.* Extinct quadrupeds and birds.

10. *Diluvion and Alluvion.* Living quadrupeds and men.

IV. The chemical ingredients of rocks are of great importance in distinguishing them. Although liable to some variety and anomaly, the principal series appear to agree in chemical composition.

1. The primary rocks are distinguished by the presence of magnesia and potash.

2. The organic rocks by their absence, but the presence of gypsum and excess of lime.

3. The volcanic by the presence of soda and iron.

4. The average ingredients of 7 series of important rocks, are as follows.

*Primary Series, chiefly granit.* Silice 60, lime 8, alumine 16, magnesia 6, potash 4, iron

2, adventitious 4 parts out of 100.

*Primary transition.* Silice 58, lime 16, alumine 14, magnesia 2, potash 2, adventitious iron, gypsum, bitumen. &c. 8.

*Secondary.* Silice 56, lime 24, alumine 12, adventitious, gypsum, salt, iron. &c. 8.

*Tertiary.* Silice 52, lime 32, alumine 10, adventitious gypsum, &c. 6.

*Volcanic Lava.* Silice 72, lime 2, alumine 10, potash 4, soda 2, iron 4, adventitious 6.

*Phonolite or Clinkstone.* Silice 60, lime 2, alumine 24, soda 8, iron 2, adventitious 4.

*Basalt.* Silice 48, lime 8, alumine 8, iron 18, soda 4, adventitious 4. (J.)

V. The natural ingredients of rocks and strata: or successive arrangement of their matter, may be comprized under 6 series.

1st Series. *Molecules.* They are the chemical ingredients enumerated above.

2d Series. *Particles or granular parts.* They are of 4 kinds, 1. crystalline, 2. porphyritic, 3. coherent or granitic and semi crystalline, 4. arenaceous.

3d Series. *Concretions.* Of 8 kinds, 1. crystalline, 2. porphyritic or cristalliferous, 3. semi crystalline, 4. concentric laminar, 5. amygdaloid, 6. irregular as in verd antique, 7. fragmentary or conglomerate, 8. organic, containing imbedded organic remains.

4th Series. *Masses or Massive portions.* Of 9 kinds, according to structure, 1. lami-



nar, 2. lamellar, 3. foliated, 4. schistose, 5. slaty, 6. tabular, 7. stratified, which are parallel, promiscuous or partial, 8. beds or spreading masses, 9. angular or polyedrous, with 3 to 6 angles and sides, and either columnar or bent or curved, distorted, with concretions, &c.

5th Series. *Veins*. Of 3 kinds by size, 1. filamentose, 2. radi-cose, 3. dykes or huge veins. But of 6 kinds by directions, 1. interposed, 2. intercurrent, 3. intersecting, 4. insulated, 5. connected, 6. branched.

6th Series. *Mountain masses*. Of 5 kinds, 1. homogenous, 2. venigenous, 3. aggregate, 4. stratified, 5. unstratified. (K.)

#### *Notes by C. S. R.*

A. These views although partly astronomical and geogonical are perhaps the base of geology. They need no comment. Those who have adopted a different view of geogony will not assent perhaps; but if they bow to names those of Laplace, Herschell, Lasalle, Lamethrie, Patrin, Hibbert, and fifty other geologists of note, may have some weight. Although liable to controversy like all remote agencies, they have intrinsic plausibility, and agree with all the known phenomena.

B. These important facts of the intermixture of strata, may be verified in some way or other by all careful observers. I have seen them both in Europe and America, and not merely in the primitive as Hibbert, but in all the other series, Transition, Secondary, Tertiary and Volcanic! I have seen strata running into each other or pen-

trating their neighbours in Sicily, Ohio, Kentucky, and the Alleghanies. Prof. Eaton has observed something alike in the strata which he has called Cuneiform. This is a curious subject, not yet well understood by geologists, and requiring more explanation than I can now give. It is evident that new strata may fill vacuities and clefts in older strata, and that volcanic (or impelled) streams of stony matter can penetrate softer strata.

It is probable that not a single stratum is concentric to the whole earth, but all strata are local, superposed or annexed or intermingled.

C. All our geological maps and sections are at present caricatures, deficient in proportions and details. The best map can only show the superficial stratum, and sections are more the offspring of fancy than truth.

D. But this fluid was not the actual sea as commonly supposed, it must have been the waters of a part of the ocean filled with emanations either from the atmosphere or submarine eruptions of volcanoes or springs.

E. Except granitic and talcose Rocks, which are specially primitive almost all the others are also found with organic remains.

F. I have long ago, (in 1819) considered springs as *Volcanoes of water*, and volcanoes as *springs of fire*. The analogy is striking, and the volcanic geysers, mud and water eruptions, blend by gradual links with the mineral and hot-springs.

6. There is nothing to disprove and much to prove that every mineral substance and stratum, may have been formed or ejected by the agency of volcanic eruptions or



emanations, on the actual surface of the earth: remembering that mountains are omitted; the Tabular, Ridged, Peaked, Circular, Branched, Hollow, Knobby, Sloping, &c. are as many different forms: Fragments or boulders, debris, gravel, and sand ought perhaps to form a peculiar series: the Clysmian of Brongniart.

H. These ten series of organic formation are not perfect nor complete: even those of Cuvier are yet deficient, because America, Africa and Asia are not taken into account. I mean soon to give our American series. The oldest series with us is Limy, and holds Porostomes and Tethytes, Terebratulites, Madreporites, Tribolites.

I. This Cubocal Limestone, is perhaps our oldest stratum; but Encrinites do not distinguish it, being found also in newer strata. The worthy Hibbert has only stated there his own European knowledge. Our successions of strata in N. America are quite different; we have no chalk, our Gypsum has no animals. Our organic strata appear to be quite different from Europe in mineral characters, and species of fossils; although equivalent tribes and genera are found. But much fewer Cataclysms or floods than Geologists are now fond of inventing, are needed to explain all these formations. Periodical local paroxysms or Emanations will account as well or better for them.

J. This chemical table of ingredients, is novel and curious, but I am sure will be found to differ in every country, and in each successive analysis. Every peculiar rock has besides mineral ingredients peculiar to itself.

K. This methodic enumeration of natural parts of rocks is very valuable, although liable to some objections and omissions. Veins ought to follow concretions and the two series of masses be united. Although mountains may form a peculiar important series, their knowledge forms the new science

#### 143. AMERICAN HISTORY. *Some remarks on the Ruins of Otolum near Palenque—By C. S. Rufinesque.*

I have postponed my 3d letter on those ruins and the probable language of the inscriptions, to wait for further details and vocabularies from the explorers. There are now 3 explorers of the ruins, Dr. Corroy of Tabasco with whom I have begun a correspondence to procure a chontal vocabulary, Mr. Waldeck a German painter, and Mr. Galindo, a native who has lately sent to the society of Geography of Paris some interesting details.

Mr. Galindo confirms the extent of these wonderful ruins, being 7 Spanish leagues or about thirty English miles in length, Corroy and Waldeck have already surveyed 18 palaces or large buildings, some as large as the Louvre in Paris. The houses are scattered, not compact, and in a deep forest. Their form is quite peculiar, being like galleries with angular roof, and parallel with a yard between, which I take to have been the streets. The stones are cemented and like bricks, 18 inches by 9 and 2

thick, doors small, windows round or square.

A very important remark, if true, is that the actual *Maya* Indians of the neighbourhood have the same features as the sculptures on the ruins. These Indians are called *Chols* or *Puctuncs*, and the wild ones *Lacandoncs*, both speak dialects of the Maya or language of Yucatan. Galindo thinks that all the L. of Central America are derived from the Maya and that they are the children of the builders of the ruins. But he has omitted to notice the *Chontal* or *Tzendal* nation and language, which I rather consider as such. However the whole country around is filled with ruins of cities and all these nations may have been connected anciently.

On the R. *Tulija*, which means water of TUL near the ruins and navigable, is a stone bridge with arches 500 steps long, and now under water, probably by the filling or raising of the bottom, which would prove a very great antiquity. Galindo mentions also, but without name, the stream running through the ruins, the O-TOL UM of Delrio, meaning in Maya yet the first TOL. *Hun*, and *Hun*, means one in Maya. *Chol* and *Kachiquel*, which is identic with the Pelagic and Latin *Hun*, *Unum*, preserved in modern languages, God is called *Hunaku* mg. the first cause.

I have now many words in the Maya dialects taken from

Galindo, Baezo, Villagutier, Ayeta, Cordova, Herrera, Gage, Vater, Balbi, &c — But few as yet from the *Chontal* dialects, such as Quiche, Coban, Quelen, Cerquin, &c. taken from Juarros chiefly. Yet they evince a different language of which I will give a few examples.

	<i>Maya D.</i>	<i>Chontal D.</i>
†Men	Vinic	Chon
	Quil	Izen
	Chib	Mazagual
†Ten	Lahu	Chel
†Town	Cah	Zacu
Village	Milpera	Paxuyuh
†Lord	Ah	Pira
	Ahau	Ahaos
†Sun	Kinik	Aca
	Kin	Acapu
†Water	Ha	Iha, Iqui
	Bakain	Taleka
Great	Uim	Ca
	Nohoch	Guan
Boat	Chem	Pitpan.

Yet in these 8 words there are 6 having remote analogies which indicate 75 per cent of mutual affinity.

Juarros says that *Chontal* now means Rustic, being applied to the most rude mountaineers; but this name is evidently national and means *eminent men* or *men of the mountains*. Wherefore they are most likely to be the remains of the ancient TOL conquered by the Mayas and driven to the mountains. They are spread in all the mts. of Central America, and their language deserves the utmost attention.

Waldeck has stated that new dialects are now forming in

the Maya, and that every ten years makes a difference, which is almost incredible. But mountaineers are more tenacious of their speech as evinced everywhere. Due allowance must however be made for those constant changes.

#### 144. *History of Austral America.*

This will be the title of the first volume of my History of the American Nations now preparing for the press, and in which a new, correct and ample survey will be given of the nations of this continent. I have begun by the most difficult part, Austral America, which being the most remote ought to be peopled by the most ancient nations; yet I have found them closely connected together and with many other Northern and Eastern primitive nations.

This volume will include all the ancient and modern nations dwelling from the Southern tropic to the S. pole, W. of the R. Parana, with their history and tradition from the flood to 1833. These are the nations I have ascertained, reducing all the other tribes to them.

*Ancient Nations* 1. TALA-HET meaning high people or *Hatihet* great people, called now Puelches or Pampas by the Spaniards, whom they have resisted for 300 years. The tribes are Taluets, Aucaes, Divihets, Calchaquis Chechets, Leuvuhets, &c.

2. CUNIS or *Huiliches* meaning South people, the Patagons of geography. Tribes, Chol-

cheles, Toelchu, Achang, Calilehets, Yacanas, &c. only a branch of Talahets.

3. POYAS or *Caucas*, tribes Poyas, Chonos, Caucabets, Huilians, Keyus, Tiniguais or true Patagons, &c.

4. SEKEH or *Chilians*, with many tribes.

5. KAKANA in Andes of S. Peru, tribes, Xauxa, Chancas, Aucas, and Antis, Andoas, &c. ancestors of Poyas?

6. GUANAS of Tucuman, Chiriguanas &c.

7. TAOS or Chiquitos of Chaco, &c.

8. MAYAS, tribes, Timbus, Mbayas, Guaycurus, Abipon, Toba, Mocobi, &c.

9. LULE or Vilelas, and Atalalas! &c.

10. Western CUARANIS. The Eastern will be included in the History of Brazil and Paraguay.

*Modern Nations.* 1. Spanish with tribes and L. Biscayan, Gallician, Catalan, Castillian, and Gitanos, Guachos, Balerians, Canarians, &c.

2. Portuguese. 3. English, 4. Dutch. 5. French, &c.

3. African negroes of many nations.

I hope my friends and the public will not blend this labor of mine, with the numberless compilations on America, full of errors and omissions, that are so often ushered by book-makers here and elsewhere. It will be found different from any previous historical chronicle, based upon all the materials that language, monuments, re-

ords and traditions can afford, so as to be a real NATIONAL HISTORY of North and South America. C. S. R.

145. *Chontal or Tzendal vocabulary.*

I deem it proper to add here my small vocabulary of this language chiefly from Juarros and Cabrera. Whereby it will be seen that it belongs to the same cluster of languages as the Maya, as the numbers and the word *Water* will show. This last is nearly the same in all the L. from Mexico to Nicaragua, for instance, A, AT in Mexican AT, NA in Quiche A, NA IHA, AMA in Tzendal HA in Mam HA in Uraba HA in Poconchi and Puctunc HAA in Maya MA in Tarasca

I find the Chontal language called also Zeltal, Celtales, Tzendal, and Zental, words of it thirty.

Lord or chief	<i>Ahu</i>
Mountain	<i>Hatez</i>
Father	<i>Pa</i>
River	<i>Bera</i>
Fountain	<i>Mal</i>
Tyger	<i>Zagual</i>
Flying	<i>Comi</i>
Year	<i>Vilbu</i>
Land	<i>Tu/an, An</i>
Men	<i>Chon</i>
Great	<i>Ca</i>
Sun	<i>Aca</i>
Temple	<i>Cue</i>
Priest	<i>Pupax, Tapiane</i>
Sorcerer	<i>Bruhos</i>
Village	<i>Pahuu</i>

Stone  
Dance  
Holy  
Drum  
Snake  
Heart  
King  
Coat  
Spirit  
Place  
Water

1  
3  
10

*Chala, Chay*  
*Huaste*  
*Huateg*  
*Tapana*  
*Chvri*  
*Volan*  
*Mek*  
*Tzequil*  
*Nagual*  
*Mitpa*  
*A, ha na, iha*  
*Aque*  
*Amague*  
*U*  
*Ohx*  
*Xel.*

Meantime the explorers of the ruins ought to give us a larger vocabulary of the modern Tzendal, and also others of the dialects of the tribes Zoques, Quelenes, Acalas, Moapanes, Chorti, Quiche, Mam, Pocomam, Zutugil, Lencas, &c. which Juarros mentions in the neighbourhood. C. S. R.

146. GYPSIES OF AMERICA.

It is stated by Griscom in his account of the Gypsies in Siliman's journal, that none have reached America. This assertion is not true, since Southey in his History of Brazil positively asserts the contrary and states that they are found both in Brazil and Buenos Ayres; not in the cities of course, but in the country where they wander or carry on their petty trades. Most of them were sent there from Spain and Portugal as vagrants, where they are called *gitanos*.

Thus we must add this nation to our list of the modern

American population. Their true name is *Txingari*, they are native of Hindostan, of the degraded tribes of *Paria*, conquered by the Hindus or outcasts from them. They are stated to exceed 5 millions yet in Asia, Europe and Africa. In America their number is small, and even less than that of the Jews. C. S. R.

147. BOTANY. N. G. YGRAMMELA AND PELTIMELA.

*Ygrammela*. Calix campanulate, nearly bilabiate 4 fid, upper lip 1 larger segment, lower 3 acute smaller segments. Corolla campanulate subequal 5 lobed, 2 upper lobes erect, 3 lower spreading, stamens 2, filaments slender, anthers didymous. Pistil with oval ovary, style short, stigma bilobate. Capsul bivalve unilocular, receptacle central large, bearing many small seeds—Leaves radical, scapes uniflore.

*Y. maritima* Raf. leaves filiform obtuse smooth, several scapes shorter than leaves, plants respitose.

A small plant discovered this year in the wet sand in the sea islands of New Jersey. whence the name meaning moist sand. It has the habit of *Limosella*, but forms a compact short turf one inch high. Flowers in July of a bluish white colour. If some Botanists will unite it to *Limosella*, although it has 2 stamens instead of 4, they may call it *L. maritima*, but then they must unite *Lycopus* to *Mentha*, which

differs in no otherwise, and so on with 50 other diandrous genera.

Yet we find some botanists have already united to *Limosella*, 3 species with 2 stamens *L. Silesiaca*, *L. capensis* and *L. diandra*, all of which differ more or less besides, I suspect that the 2 first belong to my *G. Ygrammella* by having a 4 fid. calix instead of 5 fid. If they do not they must form a peculiar *G. Mulafnia* Raf. As to *L. diandra* it is a very distinct *G.* by Willdenow account and I call it

*PELTIMELA* (meaning small peltated stigma), calix tridentate, corolla quadriparted, style incurved, stigma peltate, 2 stamens. How could this be united to *Limosella* with cal. 5 fid. cor. 5 fid. 4 stamens, &c.?

*P. cuneata* Raf. leaves linear cuneate, scapes equal—native of India. C. S. R.

148. On the Custard-apples or *Annona triloba* and *glabra*.

Linneus has two Sp. under those names as natives of N. America and he quotes 2 figures of Catesby as references. Yet our worshippers of Linneus have dared to overlook this, and deem them both only one, which they call commonly *A. triloba*. Both are however in Bartram's garden and I have seen them frequently. As the leaves are nearly alike, and the flowers and fruits which afford the best characters are seen but rarely, the flowers besides in early spring before

the leaves come out, the mistake may be accounted for; but not the disrespects for the idol.

The *A. glabra* is a large tree, with black purple flowers and a fruit as large as a cucumber; it grows in the South and West from Ohio to Georgia. Fruit very good and worthy cultivation.

While the *A. triloba* is only a large shrub has green flowers and a fruit one fourth the size only of the last. It grows from Pennsylvania to Virginia.

Bartram discovered in Georgia and Florida 3 other shrubby sp. with small fruits. All these now belong to the Genus *Asimina* of Adanson 1763, which other botanists attempted to change into *Orchidocarpon* and *Porcelia*; but Duval and Decandolle have restored the oldest good name of Adanson, derived from the native name in Louisiana of *Asiminier*.

There are perhaps other sp. in the West, I have seen one with rough seeds, but I am not prepared to distinguish it properly. I refer our lazy botanists to Linneus and Catesby for the striking characters of *A. glabra* and *triloba*. Eaton has both, but he leaves *A. glabra* into the genus *Annona*, while I aver, having both before me in fruit, that it is a real *Asimina*, having the fruits transversally multilocular, seeds arillate, and only one stigma to each fruit, which mostly abort except one in a flower, just as in *A. triloba*.

C. S. RAFINESQUE.

#### 149. ECPEXIS.

##### N. G. of Water Plants.

A very singular water plant, one of the simplest in nature, is found in the river Schuylkill and even in the hydrant water from it. When allowed to stand a week in warm weather, a kind of diaphanous gelatinous film forms itself on the top of it, which gradually increases downwards and fills the vessel holding it, as if the whole water was congealing; but when the water is all changed in this transparent jelly, it begins to dry up, and the whole by degrees becomes a mere thin transparent membrane suspended above. I have repeatedly noticed and watched this vegetable production, which must be produced by invisible germs in the water, and is very akin to *Nostoc* and other simple water *Tremellas*. I give it the name of *Ecpexis* meaning congeled film.

*ECPEXIS*, N. G. Raf. Floating on water, solid, gelatinous, transparent, without any appearance of organs.

*E. fluviatilis* Raf. Amorphous, flattened, smooth, uncolored. From 2 to 10 inches or more, unequally circular, but it is so hard to be seen out of vessels that I could not watch its form in the river. It appears to increase downwards by the successive formation of a simple cellular jelly. C.S.R.

#### 150. Substitutes for Tobacco.

We have borrowed from the Indians the filthy and vicious

custom of smoking, or inhaling the hot vapor of a pernicious weed, a narcotic poison. We ought at least to borrow from them the mode of making Tobacco milder and less pernicious, and above all fragrant instead of stinking: they seldom smoke pure tobacco, but always mix it with fragrant or milder substances.

Whoever smokes pure tobacco habitually, is a selfish vicious man, particularly if he throws the stinking smoke into the lungs of whoever chances to be near him; which no one has a right to do as it is a real nuisance, as much so as if a man was to throw dust or brimstone smoke into the noses of his neighbors.

Therefore let them adopt at least fragrant tobacco, the tobaccoists who will devise and introduce them will probably make fortunes and deserve well of mankind, as it will lessen the evil done to themselves and to others by smokers. Fragrant cigars might thus be made better than Havana. Those are made fragrant by the leaves of *Piqueria* or of *Liatris odoratissima*.

Here is a recipe for making Fragrant Tobacco for the pipe such as used by the Indians of Canada, 1-3d tobacco leaves, one third leaves of red willow, *Salix purpurea*, and one third shumac leaves.

The leaves of the sweet gum or Liquid-amber, make a very fragrant tobacco by themselves or mixt, and they can be rolled

in cigars. Many other leaves are equally good, such as sweet fern, wintergreen, and many more which I shall indicate if any disposition is evinced to leave off the strong stinking tobacco. This fragrant substitute could be afforded so cheap that the present smokers would no longer be compelled to smoke coarse rank cigars.

C. S. R.

#### 151. *Huge Water Volcano.*

One of the highest volcano throwing water instead of fire, is found near Guatimala. It is a perfect cone 14,500 feet high and 72 miles in circuit. Dunn who ascended it in 1828 says that the crater which once threw a flood of water, is a rocky concave hollow, only 140 by 120 yards; it has now mosses and grasses in it. The Spanish call it *Volcan de Agua* or water volcano. The Indian village of S. Maria is 7500 ft. high on it. It is divided in 4 regions. 1. Cultivated or tropical till 9000 feet. 2. Woody region or forest of oaks, with canes and the rare tree *Cheiros-temon*. 3. Naked region of grasses. 4. Of scrubby Pines crowning the top, where there is a sublime and extensive view, the two oceans Atlantic and Pacific can be seen from it. The thermometer stood at 42 deg. when it was 72 degrees at the base.

It was called *U-hatex-mal-ha* by the Chontals, meaning *the mountain throwing water*, and has thus been known as such



very anciently, since it has given the name to the country and cities of Guatemala. The old city of that name near it, has often been destroyed by it, and the fire volcano of Alotenango, which last eruption was in 1826.

Let geologists explain what difference there is between this huge spring of water, and other periodical springs of smaller size.

C. S. R.

### 152 *Improvements in Navigation.*

They are always very slow by the force of habit and fear of innovation. Let us remember how long it has taken from the introduction of rafts to that of steamboats. Even steamboats were invented three centuries before they were adopted. But now the march of improvement is more rapid. It is now requisite to build steamboats that will be incombustible and can never catch

fire, 2d, that may never sink even when striking against snags, rocks, &c. 3d, that never will burst their boilers. All these 3 requisites, which every one should think indispensable to secure lives and property, are either known or in a fair way to be discovered ere long. But will the owners and builders of these boats adopt such improvements? Perhaps not, they are intent only on speed, and insuring do not care for wanton losses of lives! But the public must call for and demand these safe improvements, by neglecting those who sport with life.

Yes, let it be known that I and others know how to prevent any boat from ever sinking, and from burning or catching fire, and I am ready to impart the information or sell the articles required for the purpose.

C. S. RAFINESQUE.

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### 1. ANTIGNIS,

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